

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

**AMENDMENTS TO THE CLAIMS**

This listing of claims replaces all prior versions of claims in the application.

**Listing of Claims:**

Claims 1-8 (canceled)

Claim 9 (new): A method of producing a grid for a battery electrode plate comprising a step of forming a grid from a sheet by a rotary expander,  
wherein said rotary expander comprises:  
a disk cutter cluster comprising a pair of disk cutter rolls;  
a middle disk cutter disposed in each of said disk cutter rolls;  
an edge disk cutter disposed at an edge of said disk cutter cluster; and  
a notch provided at the periphery of said edge disk cutter and penetrating said edge disk cutter in the thickness direction of said edge disk cutter.

Claim 10 (new): The method of producing a grid for a battery electrode plate according to Claim 9,  
wherein a ridge is disposed at the periphery of said edge disk cutter and said ridge protrudes by 30% or greater of the thickness of said sheet from a reference plane of said disk cutter cluster.

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

Claim 11 (new): The method of producing a grid for a battery electrode plate according to  
Claim 10,

wherein said ridge protrudes by 70% or greater of the thickness of said sheet from said  
reference plane.

Claim 12 (new): The method of producing a grid for a battery electrode plate according to  
Claim 9,

wherein a ridge is disposed at the periphery of said edge disk cutter and the height of  
protrusion of said ridge from a reference plane of said disk cutter cluster is 110% or less of the  
thickness of said sheet.

Claim 13 (new): The method of producing a grid for a battery electrode plate according to  
Claim 9,

wherein a bottom part of said notch is positioned on the side of a disk cutter roll equipped  
with said edge disk cutter against a reference plane of said disk cutter cluster.

Claim 14 (new): The method of producing a grid for a battery electrode plate according to  
Claim 9, wherein

a ridge is disposed at the periphery of said edge disk cutter,

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

an inclined plane is formed that contacts with said ridge at least at a part of contact with said notch, and

said inclined plane approaches a rotation shaft of said edge disk cutter as it proceeds toward the outside of said disk cutter cluster along said rotation shaft.

Claim 15 (new): The method of producing a grid for a battery electrode plate according to

Claim 14,

wherein said ridge is formed by a peripheral side face of said edge disk cutter.

Claim 16 (new): A method of producing a lead-acid battery comprising a step of using a grid for a battery electrode plate, wherein

said grid is formed from a sheet by a rotary expander, and

said rotary expander comprises:

a disk cutter cluster comprising a pair of disk cutter rolls;

a middle disk cutter disposed in each of said disk cutter rolls;

an edge disk cutter disposed at an edge of said disk cutter cluster; and

a notch provided at the periphery of said edge disk cutter and penetrating said edge disk cutter in the thickness direction of said edge disk cutter.

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

Claim 17 (new): The method of producing a lead-acid battery according to Claim 16, wherein a ridge is disposed at the periphery of said edge disk cutter and said ridge protrudes by 30% or greater of the thickness of said sheet from a reference plane of said disk cutter cluster.

Claim 18 (new): The method of producing a lead-acid battery according to Claim 17, wherein said ridge protrudes by 70% or greater of the thickness of said sheet from said reference plane.

Claim 19 (new): The method of producing a lead-acid battery according to Claim 16, wherein a ridge is disposed at the periphery of said edge disk cutter and the height of protrusion of said ridge from a reference plane of said disk cutter cluster is 110% or less of the thickness of said sheet.

Claim 20 (new): The method of producing a lead-acid battery according to Claim 16, wherein a bottom part of said notch is positioned on the side of a disk cutter roll equipped with said edge disk cutter against a reference plane of said disk cutter cluster.

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

Claim 21 (new): The method of producing a lead-acid battery according to Claim 16,  
wherein

a ridge is disposed at the periphery of said edge disk cutter,  
an inclined plane is formed that contacts with said ridge at least at a part of contact with  
said notch, and  
said inclined plane approaches a rotation shaft of said edge disk cutter as it proceeds  
toward the outside of said disk cutter cluster along said rotation shaft.

Claim 22 (new): The method of producing a lead-acid battery according to Claim 21,  
wherein said ridge is formed by a peripheral side face of said edge disk cutter.

Claim 23 (new): An apparatus for producing a grid for a battery electrode plate  
comprising:

a disk cutter cluster comprising a pair of disk cutter rolls;  
a middle disk cutter disposed in each of said disk cutter rolls;  
an edge disk cutter disposed at an edge of said disk cutter cluster; and  
a notch provided at the periphery of said edge disk cutter and penetrating said edge disk  
cutter in the thickness direction of said edge disk cutter.

Preliminary Amendment  
Serial No. 10/523,839  
Attorney Docket No. 052077

Claim 24 (new): The apparatus for producing a grid for a battery electrode plate according to Claim 23, wherein

a ridge is disposed at the periphery of said edge disk cutter,

an inclined plane is formed that contacts with said ridge at least at a part of contact with said notch, and

said inclined plane approaches a rotation shaft of said edge disk cutter as it proceeds toward the outside of said disk cutter cluster along said rotation shaft.

Claim 25 (new): The apparatus for producing a grid for a battery electrode plate according to Claim 24,

wherein said ridge is formed by a peripheral side face of said edge disk cutter.